

PATENT APPLICATION

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No. 10/004,873

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Currently amended) An image analyzing method ~~comprising the steps of~~ including:

dropping spot-like spots of dropping a specific a binding substance onto a substrate to form a plurality of spots,

photoelectrically detecting all of the thus formed spots to produce template data,

producing a template for defining regions of interest to be quantified based on the thus produced template data, and

~~effecting performing~~ quantitative image analysis based on the template.

2. (Currently amended) An image analyzing method in accordance with Claim 1, ~~which comprises the steps of spot-like dropping wherein:~~

dropping a binding substance onto a substrate further includes dropping a fluorescent dye for producing template data capable of being efficiently-stimulated by a stimulating ray having a different wavelength from that of a stimulating ray capable of efficiently-stimulating a fluorescent dye labeling a target substance derived from a living organism ~~onto the substrate together with the specific binding substance to form a plurality of spots, and~~

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irradiating the plurality of spots with a stimulating ray having a wavelength capable of efficiently-stimulating the fluorescent dye for producing template data, thereby stimulating the fluorescent dye for producing template data, wherein the irradiating of the plurality of spots occurs prior to photoelectrically detecting the plurality of spots to produce template data

~~photoelectrically detecting fluorescence emission released from the fluorescent dye for producing template data, producing the template data, producing a template for defining regions of interest to be quantified based on the thus-produced template data and effecting quantitative analysis based on the template.~~

3. (Currently amended) An image analyzing method in accordance with Claim 2, ~~which comprises the steps of~~ wherein:

~~spot-like dropping the dropping a binding substance onto a substrate further includes dropping a fluorescent dye labeling a target substance derived from a living organism, said fluorescent dye labeling a target substance derived from a living organism capable of being stimulated by a stimulating ray having a different wavelength than that of a stimulating ray capable of stimulating the fluorescent dye for producing template data onto the substrate together with the specific binding substance to form the plurality of spots, said method further comprising:~~

hybridizing the substance derived from a living organism and labeled with a fluorescent dye with the specific binding substance is performed prior to irradiating the plurality of spots,

irradiating the step of irradiating the plurality of spots further includes irradiating the

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plurality of spots with a first stimulating ray having a wavelength capable of efficiently stimulating the fluorescent dye for producing template data, thereby stimulating the fluorescent dye for producing template data,

photoelectrically detecting fluorescence emissions includes a first detection of fluorescent emissions, said first detection detecting fluorescent emissions released from the fluorescent dye for producing template data, producing the template data, producing after which the template is produced for defining regions of interest to be quantified based on the thus-produced template data,

irradiating the wherein irradiating the plurality of spots further includes irradiating the plurality of spots with a second stimulating ray capable of efficiently stimulating the fluorescent dye to stimulate the fluorescent dye labeling the substance derived from a living organism, said second stimulating ray occurring after said first stimulating ray, and

photoelectrically detecting wherein photoelectrically detecting fluorescence emissions includes a second detection of fluorescent emissions, said second detection detecting fluorescent emissions released from the fluorescent dye labeling the substance derived from a living organism to produce image data, and effecting quantitative analysis based on the template.

4. (Currently amended) An image analyzing method in accordance with Claim 2, which comprises the steps of spot-like dropping said method further comprising:

the fluorescent dye for producing template data onto the substrate together with the specific binding substance to form the plurality of spots;

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hybridizing ~~the~~ a substance derived from a living organism and labeled with a fluorescent dye with the specific binding substance prior to irradiating the plurality of spots,

~~irradiating wherein irradiating~~ the plurality of spots further includes irradiating the plurality of spots with a first stimulating ray having a wavelength capable of efficiently stimulating the fluorescent dye labeling the substance derived from a living organism to stimulate the fluorescent dye,

wherein photoelectrically detecting fluorescence emissions includes a first detection of fluorescent emissions, said first detection detecting fluorescent emissions released from the fluorescent dye labeling the substance derived from a living organism to produce image data,

~~irradiating the~~ wherein irradiating the plurality of spots further includes irradiating the plurality of spots with a second stimulating ray having a wavelength capable of efficiently stimulating the fluorescent dye for producing template data, thereby stimulating the fluorescent dye for producing template data, wherein said second stimulating ray occurs after said first stimulating ray, and

photoelectrically detecting fluorescence emissions includes a second detection of fluorescent emissions, said second detection detecting fluorescent emissions released from the fluorescent dye for producing template data, producing a template data, producing a template for defining regions of interest to be quantified based on the thus produced template data, and effecting quantitative analysis based on the template.

5. (Currently amended) An image analyzing method in accordance with Claim 2,

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~~which comprises the steps of spot-like dropping the wherein:~~

~~fluorescent dye for producing template data onto the substrate together with the specific binding substance to form the plurality of spots,~~

irradiating the plurality of spots further includes irradiating the plurality of spots with a first stimulating ray having a wavelength capable of efficiently stimulating the fluorescent dye for producing template data, thereby stimulating the fluorescent dye for producing template data,

photoelectrically detecting fluorescence emissions includes a first detection of emissions, said first detection of emission detecting fluorescent emissions released from the fluorescent dye for producing template data, ~~producing the template data, producing a~~ after which the template is produced for defining regions of interest to be quantified based on the ~~thus produced~~ template data,

hybridizing is then performed wherein the ~~a~~ substance derived from a living organism and labeled with a fluorescent dye is hybridized with the specific binding substance forming the plurality of spots on the substrate,

irradiating the plurality of spots further includes irradiating the plurality of spots with a second stimulating ray having a wavelength capable of efficiently stimulating the fluorescent dye labeling the substance derived from a living organism to stimulate the fluorescent dye, said second stimulating ray occurring after said first stimulating ray, and

photoelectrically detecting fluorescence emissions includes a second detection of fluorescent emissions, said second detection detecting fluorescent emissions released from the fluorescent dye labeling the substance derived from a living organism to produce image data.

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~~defining regions of interest to be quantified in the image data based on the template and effecting quantitative analysis based on the template.~~

6. (Currently amended) An image analyzing method in accordance with Claim 2, wherein;

the fluorescent dye for producing template data is contained in a polymer, and wherein
~~which comprises the steps of causing the polymer to contain the specific binding substance, spot-like dropping the polymer onto the substrate to form a plurality of spots, irradiating the plurality of spots with a stimulating ray having a wavelength capable of efficiently stimulating the fluorescent dye for producing template data, thereby stimulating the fluorescent dye for producing template data, photoelectrically detecting fluorescence emission released from the fluorescent dye for producing template data, producing the template data, producing the template for defining regions of interest to be quantified based on the thus produced template data, and effecting quantitative analysis based on the template.~~

7. (Currently amended) An image analyzing method in accordance with Claim 6 wherein the fluorescent dye for producing template data is contained in the polymer and which comprises the steps of causing the polymer to contain the specific binding substance, wherein the method further includes:

~~spot-like dropping the specific binding substance further includes dropping the polymer~~
onto the substrate to form the plurality of spots,

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hybridizing the ~~a~~ substance derived from a living organism and labeled with a fluorescent dye with the specific binding substance, and wherein

irradiating the plurality of spots further includes irradiating the plurality of spots with a first stimulating ray having a wavelength capable of efficiently stimulating the fluorescent dye for producing template data, thereby stimulating the fluorescent dye for producing template data,

photoelectrically detecting fluorescence emissions includes a first detection of fluorescent emissions, said first detection detecting emissions released from the fluorescent dye for producing template data, ~~producing the template data, after which the template is produced~~
~~producing a template for defining regions of interest to be quantified based on the thus-produced~~
template data,

irradiating the plurality of spots further includes irradiating the plurality of spots with a second stimulating ray having a wavelength capable of efficiently stimulating the fluorescent dye labeling the substance derived from a living organism to stimulate the fluorescent dye, wherein the second stimulating ray occurs after said first stimulating ray, and

photoelectrically detecting fluorescence emissions includes a second detection of fluorescent emissions, said second detection detecting fluorescent emissions released from the fluorescent dye labeling the substance derived from a living organism to produce image data, and effecting quantitative analysis based on the template.

8. (Currently amended) An image analyzing method in accordance with Claim 6 wherein the fluorescent dye for producing template data is contained in the polymer and which

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~~comprises the steps of causing the polymer to contain the specific binding substance, wherein the method further includes:~~

~~spot-like dropping the specific binding substance further includes dropping the polymer onto the substrate to form the plurality of spots,~~

~~hybridizing the a substance derived from a living organism and labeled with a fluorescent dye with the specific binding substance, and wherein~~

~~irradiating the plurality of spots further includes irradiating the plurality of spots with a first stimulating ray having a wavelength capable of efficiently stimulating the fluorescent dye labeling the substance derived from a living organism, thereby stimulating the fluorescent dye labeling the substance derived from a living organism,~~

~~photoelectrically detecting fluorescence emissions includes a first detection of fluorescent emissions, said first detection detecting emissions released from the fluorescent dye labeling the substance derived from a living organism to produce image data,~~

~~irradiating the plurality of spots further includes irradiating the plurality of spots with a second stimulating ray having a wavelength capable of efficiently stimulating the fluorescent dye for producing template data, thereby stimulating the fluorescent dye for producing template data, wherein the second stimulating ray occurs after the first stimulating ray, and~~

~~photoelectrically detecting fluorescence emission-emissions includes a second detection of fluorescent emissions, said second detection detecting fluorescent emissions released from the fluorescent dye for producing template data, producing the template data, producing a template for defining regions of interest to be quantified based on the thus produced template data, and~~

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~~effecting quantitative analysis based on the template.~~

9. (Currently amended) An image analyzing method in accordance with Claim 1,
~~which comprises the steps of wherein:~~

prior to the dropping spots of a binding substance, dropping a solution containing the
fluorescent dye for producing template data is dropped onto the a substrate using a spotter to
form ~~the a~~ first plurality of spots,

~~irradiating the first plurality of spots~~ are irradiated with a stimulating ray having a
wavelength capable of efficiently stimulating the fluorescent dye for producing template data,
thereby stimulating the fluorescent dye for producing template data,

photoelectrically detecting fluorescence emissions includes a first detection of fluorescent
emissions, said first detection detecting emissions released from the fluorescent dye are
photoelectrically detected for producing template data, after which producing the template data is
produced, producing a template for defining regions of interest to be quantified based on the thus
produced template data, and wherein

dropping the specific binding substance includes dropping a solution containing the
specific binding substance using the spotter onto another substrate to form a second plurality of
spots,

~~hybridizing the~~ substance derived from a living organism and labeled with a fluorescent
dye is hybridized with the specific binding substance,

~~irradiating the second plurality of spots~~ are irradiated with a stimulating ray having a

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wavelength capable of efficiently-stimulating the fluorescent dye labeling the substance derived from a living organism, thereby stimulating the fluorescent dye, wherein the second stimulating ray occurs after the first stimulating ray, and

photoelectrically detecting fluorescence emissions includes a second detection of fluorescent emissions, said second detection detecting emissions released from the fluorescent dye labeling the substance derived from a living organism to produce image data, defining regions of interest to be quantified in the image data, and effecting quantitative analysis.

10. (Currently amended) An image analyzing method in accordance with Claim 1, wherein:

~~which comprises the steps of spot like dropping the specific binding substance onto the substrate to form the plurality of spots;~~

~~irradiating the plurality of spots is irradiated with light, and photoelectrically detecting the light is scattered by the plurality of spots to produce the template data, and producing a template for defining regions of interest to be quantified based on the thus produced template data.~~

11. (Currently amended) An image analyzing method in accordance with Claim 10, wherein ~~which comprises the steps of spot like dropping the specific binding substance onto the substrate to form the plurality of spots, hybridizing the~~

a substance derived from a living organism and labeled with a fluorescent dye is

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hybridized with the specific binding substance and with a fluorescent dye for producing template data,

~~irradiating the plurality of spots is irradiated with a first stimulating ray having a wavelength capable of efficiently stimulating the fluorescent dye for producing template data,~~

photoelectrically detecting further includes photoelectrically detecting the light scattered by the plurality of spots to produce template data, producing a template for defining regions of interest to be quantified based on the thus produced template data,

~~irradiating the plurality of spots are irradiated with a second stimulating ray having a wavelength capable of efficiently stimulating the fluorescent dye labeling the substance derived from a living organism,~~ thereby stimulating the fluorescent dye labeling the substance derived from a living organism, wherein the second stimulating ray occurs after the first stimulating ray, and

~~photoelectrically detectioning further includes detecting fluorescence emissions released from the fluorescent dye are photoelectrically detected labeling the substance derived from a living organism to produce image data, defining the regions of interest to be quantified in the image data based on the template, and effecting quantitative analysis.~~

12. (Currently amended) An image analyzing method in accordance with Claim 10, wherein: ~~which comprises the steps of spot-like dropping the specific binding substance onto the substrate to form the plurality of spots,~~

~~hybridizing the~~ substance derived from a living organism and labeled with a fluorescent

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dye is hybridized with the specific binding substance,

~~irradiating~~ the plurality of spots are irradiated with a first stimulating ray having a wavelength capable of efficiently stimulating the fluorescent dye for labeling the substance derived from a living organism, thereby stimulating the fluorescent dye,

photoelectrically detecting fluorescence emissions includes a first detection, said first detection detecting fluorescent emissions released from the fluorescent dye ~~are photoelectrically detected for labeling the substance derived from a living organism~~ to produce image data,

~~irradiating~~ the plurality of spots are irradiated with a second stimulating ray having a wavelength capable of efficiently stimulating the fluorescent dye for producing template data, wherein the second stimulating ray occurs after the first stimulating ray, and

~~photoelectrically detecting~~ light scattered by the plurality of spots stimulated by the second stimulating ray is photoelectrically detected in a second detection, said second detection producing to produce template data, ~~producing a~~ and a template based on said template data for defining regions of interest to be quantified based on the thus produced template data and, defining regions of interest to be quantified in the image data based on the template, ~~and effecting performing quantitative image analysis.~~

Claims 13-20 (cancelled).

21. (New) The image analyzing method of claim 1, wherein the quantitative image analysis includes reading image data in a two-dimensional map.

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22. (New) The image analyzing method of claim 21, further wherein reading image data includes reading the size and position of fluorescently detected emissions of a fluorescent dye used to label a substance derived from a living organism.

23. (New) The image analyzing method of claim 22, further wherein the image data is compared with the template to determine regions of interest.

24. (New) The image analyzing method of claim 23, further wherein the regions of interest are superimposed with the image data.

25. (New) The image analyzing method of claim 6, wherein the polymer is of a high viscosity.

26. (New) The method of claim 1, further comprising setting a region of interest based on the template data, and performing quantitative image analysis based on the regions of interest based on the template data.